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# Fujita Laboratory (Special Issue on the Commemoration of the Fortieth Anniversary)

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## FUJITA LABORATORY (December 1962~)

Head: Dr. Eiichi Fujita

In 1962 Professor Eiichi Fujita succeeded the late Professor Risaburo Nakai as head of the laboratory of Pharmacological Research for Chemotherapy. Thus, Fujita laboratory was established on 21st. December, 1962. The official name of the laboratory was changed to Physiological Activity on 25th. February, 1964.

Main subjects of research in the laboratory are the physiologically active organic natural and synthetic compounds. Works in the past three and half years are classified and summarised.

### I. Alkaloids

*Thalictrum* alkaloids were investigated. Thalictine, a bisbenzylisoquinoline alkaloid, extracted from the root of *Thalictrum Thunbergii* proved to be identical with aromoline, hence the name of homothalictine, a new alkaloid, was changed to homoaromoline<sup>1)</sup>. A detailed reinvestigation of the structure of thalictine confirmed again the unique mode of ether linkage in the molecule<sup>4)</sup>.

The structure of takatonine, another *Thalictrum* alkaloid, was revised, and a total synthesis established the correct structure<sup>5),6)</sup>.

The structure and configuration of cissampareine, a novel bisbenzylisoquinoline alkaloid possessing antitumor activity which was extracted from *Cissampelos pareira*, was clarified by chemical and spectral evidences<sup>11)</sup>.

Another work is concerned with the alkaloids of *Lythrum anceps*. Several kinds of new type alkaloids have been isolated, and the structure of lythranine, a major alkaloid, has almost certainly been clarified.

### II. Diterpenoids

A couple of reviews on the chemistry of diterpenoids in 1964<sup>3)</sup> and 1965<sup>10)</sup> were published by Prof. Fujita.

Enmein, an active bitter diterpenoid, extracted from *Isodon trichocarpus* was converted to (—)-kaurane *via* many steps of chemical reactions. Thus, the absolute configuration of the complex molecule of enmein was established by an unequivocal chemical method.<sup>2),7)</sup> The structure of the other components of *I. trichocarpus* and *I. japonicus* has been investigated and several interesting new precursors of enmein and gibberellins have been found.<sup>8),9)</sup>

### III. Synthesis of compounds possessing antifungal activity

Some potential antifungal organic compounds have been synthesized. The relation between activity and structure has been examined.

Detailed test for the physiological activity will be carried out on the foregoing natural and synthetic compounds.

### Publications

1. E. Fujita, T. Tomimatsu, and Y. Kitamura: Studies on the Alkaloids of *Thalictrum Thunbergii* DC. XV. The Identity of Thalicrine with Aromoline. *Bull. Inst. Chem. Res., Kyoto Univ.*, **42**, 235 (1964).
2. E. Fujita, T. Fujita, K. Fuji and N. Ito: The Absolute Configuration of Enmein. Transformation of Enmein into (–)-Kaurane. *Chem. Pharm. Bull.*, **13**, 1023 (1965).
3. E. Fujita: The Chemistry on the Diterpenoids in 1964. *Bull. Inst. Chem. Res., Kyoto Univ.*, **43**, 278 (1965).
4. E. Fujita, K. Fuji and T. Suzuki: Studies on the Alkaloids of *Thalictrum Thunbergii* DC. XVI. *Bull. Inst. Chem. Res., Kyoto Univ.*, **43**, 449 (1965).
5. S. Kubota, T. Masui, E. Fujita and S. M. Kupchan: The Structure and Total Synthesis of Takatonine. *Tetrahedron Letters*, **1965**, 3599.
6. S. Kubota, T. Masui, E. Fujita and S.M. Kupchan: The Structure and Total Synthesis of Takatonine. *J. Org. Chem.*, **31**, 516 (1966).
7. E. Fujita, T. Fujita, K. Fuji and N. Ito: Terpenoids-II. The Chemical Conversion of Enmein into (–)-Kaurane. The Absolute Configuration of Enmein. *Tetrahedron*, **22**, 3423 (1966).
8. E. Fujita, T. Fujita and M. Shibuya: Isolation of Enmein and its 3-Acetate from *Isodon japonicus*. *Chem. Comm.*, **1966**, 297.
9. E. Fujita, T. Fujita and M. Shibuya: Diterpenoid Constituents of *Isodon trichocarpus* and *Isodon japonicus* (Terpenoids IV). *Tetrahedron Letters*, **1966**, 3153.
10. E. Fujita: The Chemistry on Diterpenoids in 1965. *Bull. Inst. Chem. Res., Kyoto Univ.*, **44**, 239 (1966).
11. S. Morris Kupchan, S. Kubota, E. Fujita, S. Kobayashi, J.H. Block and S.A. Telang: Tumor Inhibitors. XV. The Structure and Configuration of Cissampareine, a Novel Bisbenzylisoquinoline Alkaloid. *J. Am. Chem. Soc.*, **88**, 4212 (1966).